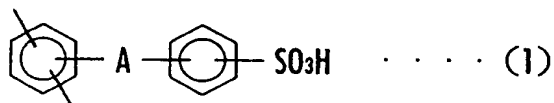


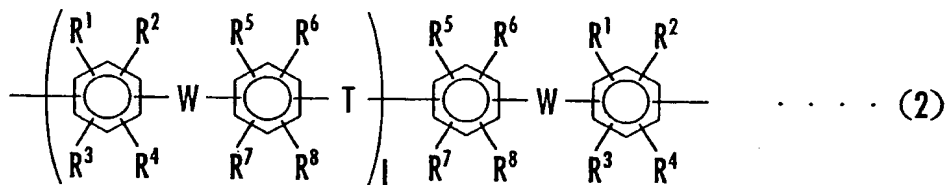
What is claimed is:

1. An electrode structure for polymer electrolyte fuel cells, comprising a pair of electrode catalyst layers, each containing a catalyst supported by carbon particles, and a polymer electrolyte membrane placed between the electrode catalyst layers,

wherein the polymer electrolyte membrane is formed from a sulfonated polyarylene consisting of 0.5 to 100% by mol of a first repeating unit represented by the general formula (1) and 0 to 99.5% by mol of a second repeating unit represented by the general formula (2):



(wherein, A is a divalent organic group; and a benzene ring includes its derivative),

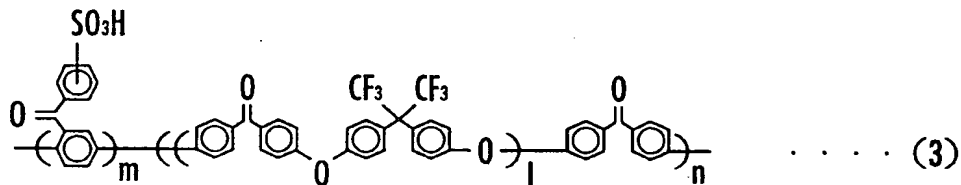


(wherein, -W- is a divalent electron attracting group; -T- is a divalent organic group; and R<sup>1</sup> to R<sup>8</sup> are a hydrogen atom or fluorine atom, an alkyl group, fluorine-substituted alkyl group, allyl group, aryl group or cyano group, and may be the same or different).

2. The electrode structure for polymer electrolyte fuel cells according to claim 1, wherein said electrode catalyst layer contains a noble metal catalyst at 0.1 to 1.0 mg/cm<sup>2</sup>,

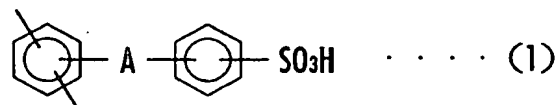
and said carbon particles have an average diameter of 10 to 100 nm.

3. The electrode structure for polymer electrolyte fuel cells according to claim 1, wherein said polymer electrolyte membrane is composed of a sulfonated polyarylene represented by the general formula (3):

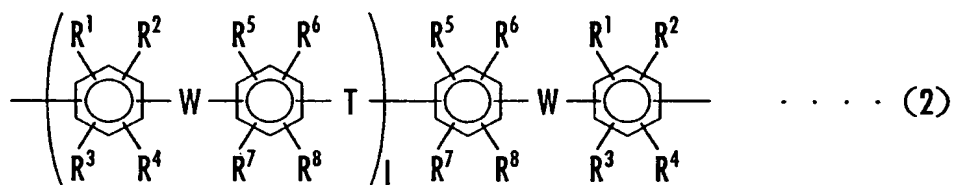


4. The electrode structure for polymer electrolyte fuel cells according to claim 1, wherein said electrode catalyst layers comprise an electrode diffusion layer.

5. A polymer electrolyte fuel cell comprising an electrode structure for polymer electrolyte fuel cells, which comprises a pair of electrode catalyst layers, each containing a catalyst supported by carbon particles, and a polymer electrolyte membrane placed between these electrode catalyst layers, the polymer electrolyte membrane being formed by a sulfonated polyarylene as a copolymer consisting of 0.5 to 100% by mol of a first repeating unit represented by the general formula (1) and 0 to 99.5% by mol of a second repeating unit represented by the general formula (2):

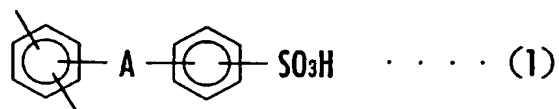


(wherein, A is a divalent organic group; and a benzene ring includes its derivative),

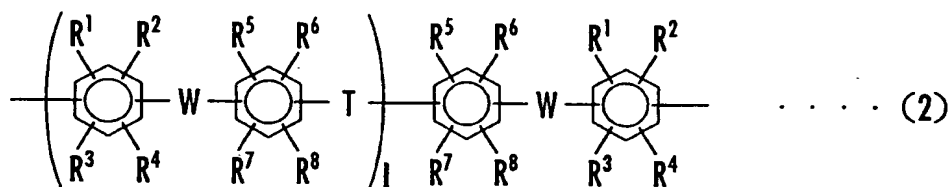


(wherein, -W- is a divalent electron attracting group; -T- is a divalent organic group; and R<sup>1</sup> to R<sup>8</sup> are a hydrogen atom or fluorine atom, an alkyl group, fluorine-substituted alkyl group, allyl group, aryl group or cyano group, and may be the same or different), wherein a fuel gas is supplied to one of the electrode catalyst layers and an oxidizing gas is supplied to the other electrode catalyst layer.

6. An electrical device which uses a polymer electrolyte fuel cell comprising an electrode structure for polymer electrolyte fuel cells, which comprises a pair of electrode catalyst layers, each containing a catalyst supported by carbon particles, and a polymer electrolyte membrane placed between these electrode catalyst layers, the polymer electrolyte membrane being formed by of a sulfonated polyarylene as a copolymer consisting of 0.5 to 100% by mol of a first repeating unit represented by the general formula (1) and 0 to 99.5% by mol of a second repeating unit represented by the general formula (2):

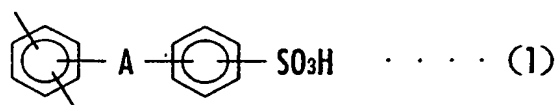


(wherein, A is a divalent organic group; and a benzene ring includes its derivative),

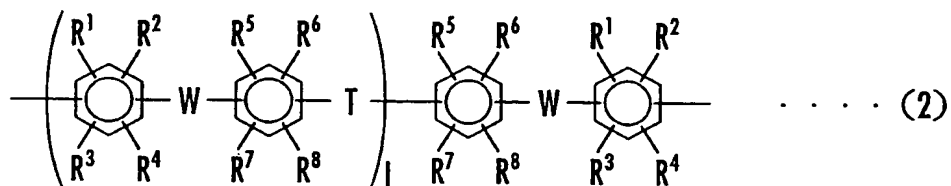


(wherein, -W- is a divalent electron attracting group; -T- is a divalent organic group; and R<sup>1</sup> to R<sup>8</sup> are a hydrogen atom or fluorine atom, an alkyl group, fluorine-substituted alkyl group, allyl group, aryl group or cyano group, and may be the same or different), and a fuel gas is supplied to one of the electrode catalyst layers and an oxidizing gas is supplied to the other electrode catalyst layer.

7. A transportation device which uses a polymer electrolyte fuel cell comprising an electrode structure for polymer electrolyte fuel cells, which comprises a pair of electrode catalyst layers, each containing a catalyst supported by carbon particles, and a polymer electrolyte membrane placed between these electrode catalyst layers, the polymer electrolyte membrane being formed by a sulfonated polyarylene as a copolymer composed of 0.5 to 100% by mol of a first repeating unit represented by the general formula (1) and 0 to 99.5% by mol of a second repeating unit represented by the general formula (2):



(wherein, A is a divalent organic group; and a benzene ring includes its derivative),



(wherein, -W- is a divalent electron attracting group; -T- is a divalent organic group; and R<sup>1</sup> to R<sup>8</sup> are a hydrogen atom or fluorine atom, an alkyl group, fluorine-substituted alkyl group, allyl group, aryl group or cyano group, and may be the same or different), and a fuel gas is supplied to one of the electrode catalyst layers and an oxidizing gas is supplied to the other electrode catalyst layer.